

Appl. No. 10/646,239
Attorney Docket No.: 2002B117/2
Amdt. dated May 18, 2006
Reply to Office Action of May 12, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in this application.

Listing of Claims:

1-55. (Canceled)

56. (Currently Amended) A multilayer stretch film comprising:

a first surface layer comprising one or more tackifiers,

a second surface layer, and

a core layer disposed between the first and second surface layers,

wherein the core layer comprises a polyethylene copolymer having a Compositional Distribution Breadth Index (CDBI) of at least 70%, a melt index $I_{2,16}$ of from 0.1 to 15 g/10 min., a density of from 0.910 to 0.940 g/cm³, a melt index ratio $I_{21,6}/I_{2,16}$ of from 30 to 80, and an Mw/Mn ratio of from 2.5 to 5.5, and

wherein the film has a natural draw ratio of at least 250%, a tensile stress at the natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa, as measured according to ASTM D-882/97.

57. (Original) An article wrapped with the film of Claim 56.

58. (Previously Presented) The film of claim 56, wherein the film has a dart impact strength D, a modulus M, where M is the arithmetic mean of the machine direction and transverse direction 1% secant moduli, and a relation between D in g/μm and M in MPa such that:

$$D \geq 0.0315 \left[100 + e^{(11.71 - 0.03887M + 4.592 \times 10^{-5}M^2)} \right].$$

59. (Previously Presented) The film of claim 56, wherein the natural draw ratio is at least 275%.

60. (Previously Presented) The film of claim 56, wherein the natural draw ratio is at least 300%.

61. (Previously Presented) The film of claim 56, wherein the tensile stress at the natural draw ratio is at least 24 MPa.

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62. (Previously Presented) The film of claim 56, wherein the tensile stress at the natural draw ratio is at least 26 MPa.
63. (Previously Presented) The film of claim 56, wherein the tensile stress at second yield is at least 14 MPa.
64. (Previously Presented) The film of claim 56, wherein the film has a tensile stress at first yield of at least 9 MPa.
65. (Previously Presented) The film of claim 56, wherein the CDBI is at least 75%.
66. (Previously Presented) The film of claim 56, wherein the CDBI is at least 85%.
67. (Previously Presented) The film of claim 56, wherein the melt index is from 0.3 to 10 g/10 min.
68. (Previously Presented) The film of claim 56, wherein the density is from 0.916 to 0.940 g/cm³.
69. (Previously Presented) The film of claim 56, wherein the density is from 0.918 to 0.935 g/cm³.
70. (Previously Presented) The film of claim 56, wherein the melt index ratio is from 35 to 60.
71. (Previously Presented) The film of claim 56, wherein the Mw/Mn ratio is from 2.8 to 4.5.
72. (Previously Presented) The film of claim 56, wherein the Mw/Mn ratio is from 3.0 to 4.0.
73. (Previously Presented) An article wrapped with the film of Claim 60.
74. (Currently Amended) A multilayer stretch film comprising:
 - at least one first layer, and
 - at least one second layer, wherein any one or more layers comprises a polyethylene copolymer with a Compositional Distribution Breadth Index (CDBI) of at least 70%, a melt

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index $I_{2,16}$ of from 0.1 to 15 g/10 min., a density of from 0.910 to 0.940 g/cm³, a melt index ratio $I_{21,6}/I_{2,16}$ of from 30 to 80, and an Mw/Mn ratio of from 2.5 to 5.5, wherein:

the film has a natural draw ratio of at least 250%, a tensile stress at the natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa, as measured according to ASTM D-882/97; and

wherein a yield plateau of the film has a linear portion with a slope of at least 0.020 MPa per % elongation; and

any one or more layers comprises at least one tackifier.

75. (Previously Presented) The film of claim 74, wherein the film has a dart impact strength D, a modulus M, where M is the arithmetic mean of the machine direction and transverse direction 1% secant moduli, and a relation between D in g/μm and M in MPa such that:

$$D \geq 0.0315 \left[100 + e^{(11.71 - 0.03887M + 4.592 \times 10^{-5} M^2)} \right].$$

76. (Previously Presented) The film of claim 74, wherein the tensile stress at the natural draw ratio is at least 26 MPa, and the natural draw ratio is at least 300%.

77. (Previously Presented) The film of claim 74, wherein the film has a tensile stress at first yield of at least 9 MPa, and a second yield of at least 14 MPa, both yields measured according to ASTM D-882/97

78. (Previously Presented) The film of claim 74, wherein the CDBI is at least 85%; the melt index ratio is from 35 to 60; and the Mw/Mn ratio is from 3.0 to 4.0.

79. (Previously Presented) The film of claim 74, wherein the melt index is from 0.3 to 10 g/10 min, and the density is from 0.918 to 0.935 g/cm³.

80. (Previously Presented) An article wrapped with the film of Claim 74.

81. (Previously Presented) A method of wrapping an article, comprising:
providing an article;

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providing the stretch film of claim 56; and
wrapping the article with the stretch film.

82. (Previously Presented) The method of claim 81, wherein the stretch film is provided in a pre-stretched condition.
83. (Previously Presented) The method of claim 81, further comprising applying a stretching force to the film before or during the step of wrapping the article with the stretch film.
84. (New) The film of claim 56, wherein the one or more tackifiers are selected from the group consisting of polybutenes, low molecular weight polyisobutylenes (PIB), polyterpenes, amorphous polypropylene, ethylene vinyl acetate copolymers, microcrystalline wax, alkali metal sulfosuccinates, and mono- and di-glycerides of fatty acids.
85. (New) The film of claim 56, wherein the first surface layer comprises of from 0.1 wt% to 20 wt% of the one or more tackifiers.
86. (New) The film of claim 56, wherein the first surface layer comprises of from 0.25 wt% to 6 wt% of the one or more tackifiers.
87. (New) The film of claim 74, wherein the one or more tackifiers are selected from the group consisting of polybutenes, low molecular weight polyisobutylenes (PIB), polyterpenes, amorphous polypropylene, ethylene vinyl acetate copolymers, microcrystalline wax, alkali metal sulfosuccinates, and mono- and di-glycerides of fatty acids.
88. (New) The film of claim 74, wherein the first surface layer comprises of from 0.1 wt% to 20 wt% of the one or more tackifiers.
89. (New) The film of claim 74, wherein the first surface layer comprises of from 0.25 wt% to 6 wt% of the one or more tackifiers.

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90. (New) A stretch film comprising:

at least one layer comprising one or more tackifiers; and

at least one layer comprising a polyethylene copolymer having a Compositional Distribution Breadth Index (CDBI) of at least 70%, a melt index $I_{2.16}$ of from 0.1 to 15 g/10 min., a density of from 0.910 to 0.940 g/cm³, a melt index ratio $I_{21.6}/I_{2.16}$ of from 30 to 80, and an Mw/Mn ratio of from 2.5 to 5.5,

wherein the film has a natural draw ratio of at least 250%, a tensile stress at the natural draw ratio of at least 22 MPa, and a tensile stress at second yield of at least 12 MPa, as measured according to ASTM D-882/97.

91. (New) An article wrapped with the film of Claim 90.

92. (New) The film of claim 90, wherein the natural draw ratio is at least 300%.

93. (New) The film of claim 90, wherein the tensile stress at the natural draw ratio is at least 26 MPa.

94. (New) The film of claim 90, wherein the tensile stress at second yield is at least 14 MPa.

95. (New) The film of claim 90, wherein the film has a tensile stress at first yield of at least 9 MPa.

96. (New) The film of claim 90, wherein the CDBI is at least 75%.

97. (New) The film of claim 90, wherein the CDBI is at least 85%.

98. (New) The film of claim 90, wherein the melt index is from 0.3 to 10 g/10 min.

99. (New) The film of claim 90, wherein the density is from 0.916 to 0.940 g/cm³.

100. (New) The film of claim 56, wherein the density is from 0.918 to 0.935 g/cm³.

101. (New) The film of claim 56, wherein the melt index ratio is from 35 to 60.

102. (New) The film of claim 56, wherein the Mw/Mn ratio is from 2.8 to 4.5.

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103. (New) The film of claim 56, wherein the Mw/Mn ratio is from 3.0 to 4.0.
104. (New) An article wrapped with the film of Claim 92.
105. (New) The film of claim 90, wherein the one or more tackifiers are selected from the group consisting of polybutenes, low molecular weight polyisobutylenes (PIB), polyterpenes, amorphous polypropylene, ethylene vinyl acetate copolymers, microcrystalline wax, alkali metal sulfosuccinates, and mono- and di-glycerides of fatty acids.
106. (New) The film of claim 90, wherein the at least one layer comprising one or more tackifiers comprises of from 0.1 wt% to 20 wt% of the one or more tackifiers.
107. (New) The film of claim 90, wherein the at least one layer comprising one or more tackifiers comprises of from 0.25 wt% to 6 wt% of the one or more tackifiers.
108. (New) The film of claim 90, wherein a yield plateau of the film has a linear portion with a slope of at least 0.020 MPa per % elongation.
109. (New) The film of claim 56, wherein the film has a cling of 122 cN to 164 cN.
110. (New) The film of claim 74, wherein the film has a cling of 122 cN to 164 cN.
111. (New) The film of claim 90, wherein the film has a cling of 122 cN to 164 cN.